(NOTE: This does not need to be forecast as foreign conference travel since it came in through the Speaker's Bureau and I will be giving this talk on my own time. However since it reports on work related to JPL I needed to have the clearance for this abstract. There will not be a paper out of this; I will be giving a 90-minute lecture only, which will be translated into Spanish in real time.)

Abstract
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Issues in Automation

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There are a variety of ways in which one can automate a process. Usually, the goal of automating an existing process is to make that process faster, more reliable, or less expensive (preferably all three.) However, to achieve this, one has to be careful not to introduce a more complicated system that performs less well than the original manual system performed.

Various factors come into the design of an automated system. How well does one know the environment in which the system will operate? How easy is it for a human operator to intervene if things start to go wrong? In general, how long will the system have to operate without human assistance, and will it try to repair or restart itself if it has a problem? Is it better to have a very stupid autonomous machine with human intervention for exceptional cases, or a very smart autonomous machine with no intervention?

These basic design issues, with some illustrative examples from past JPL robotic spacecraft and planned future autonomous spacecraft, will be discussed. General applicability of some of the lessons from the spacecraft examples and general architectural principles will be covered as well.